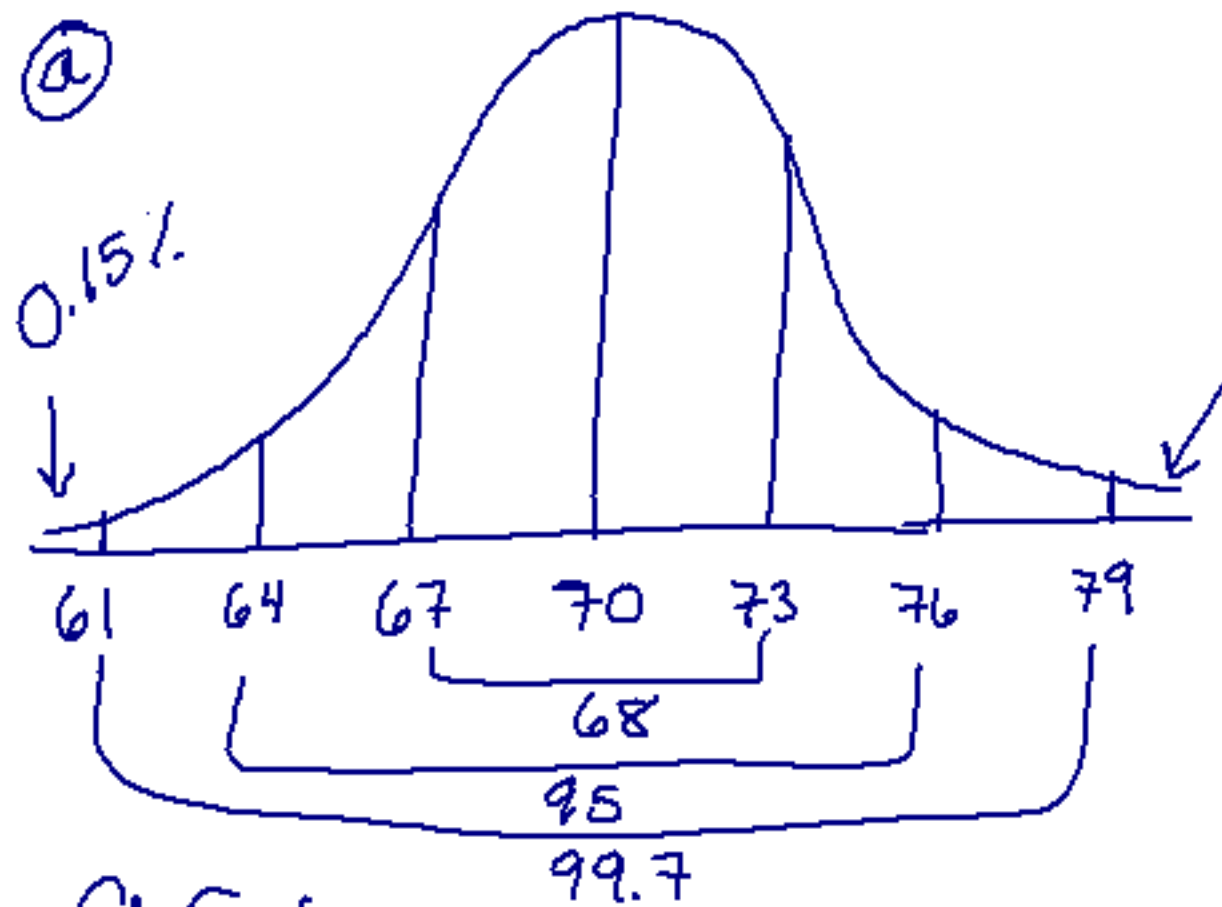
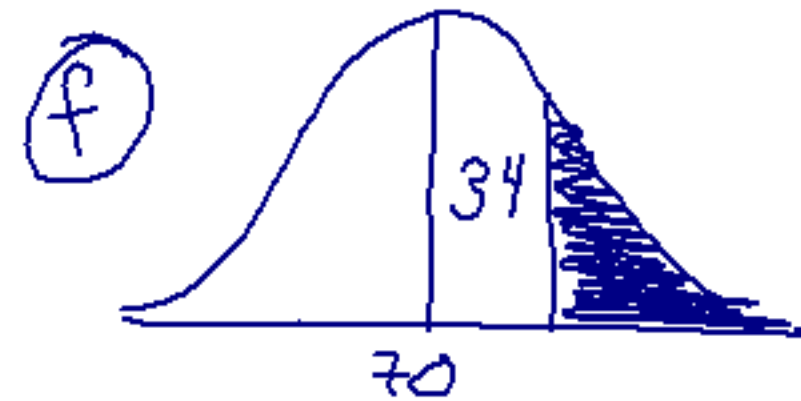


① a



e 50%



b 95%

c $0.3\% \div 2 = 0.15\%$

d



81.5%

g



83.85%

$50\% - 34\% = 16\%$

5.1



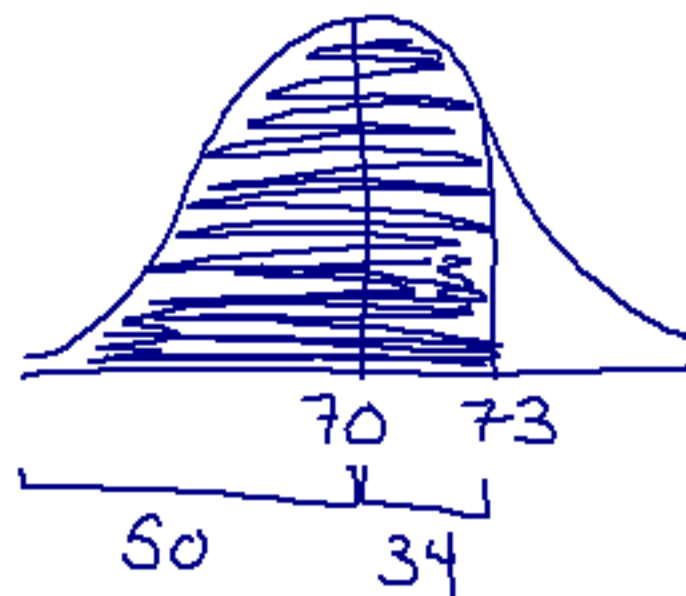
Percentile -

If an observation is in the n^{th} percentile, it means that the obs. is greater than $n\%$ of the data.

80th percentile = Scored better than 80%
or class.

$$\bar{x} = 70''$$

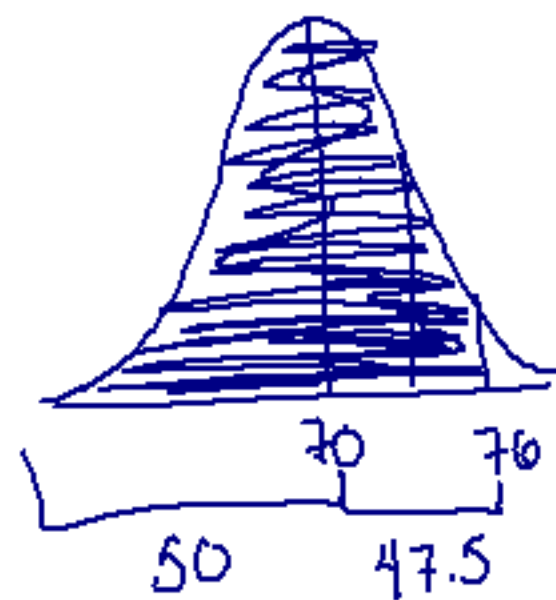
$$s = 3''$$



84th percentile



16th percentile



50% percentile

① none - ^{all} same

② math - 13% above ①

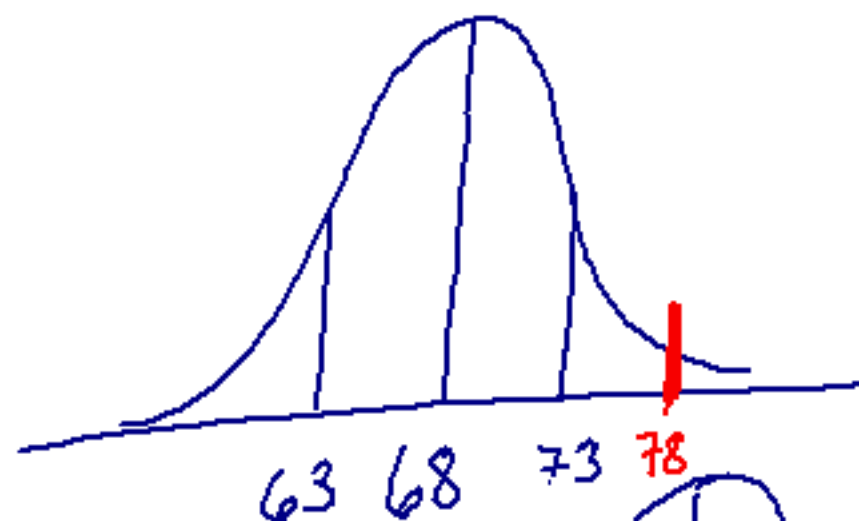
Engl - 2% above ③

Science - 8% above ②

③

③ ^① Math

2 std. dev.



② Eng l.

1 std. dev.



③ Science

less than
1 std. dev.

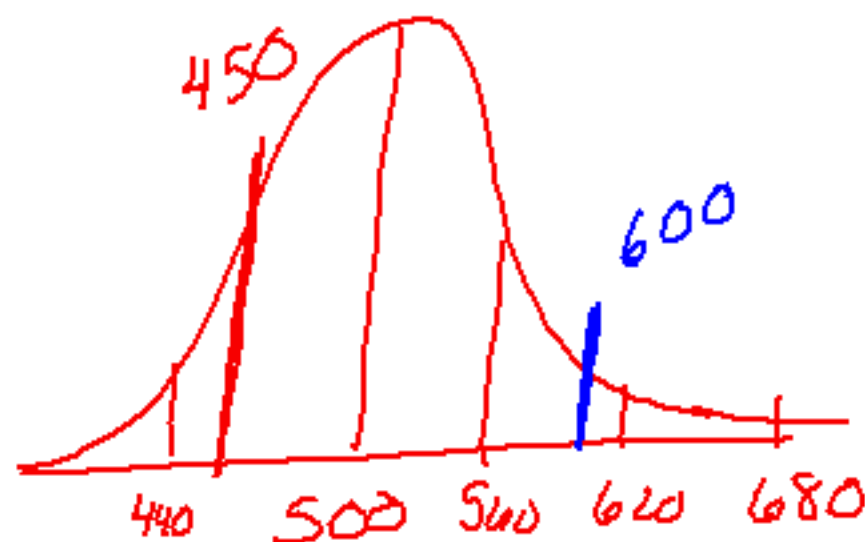


Jenny

600

$$\bar{X} = 500$$

$$S = 60$$



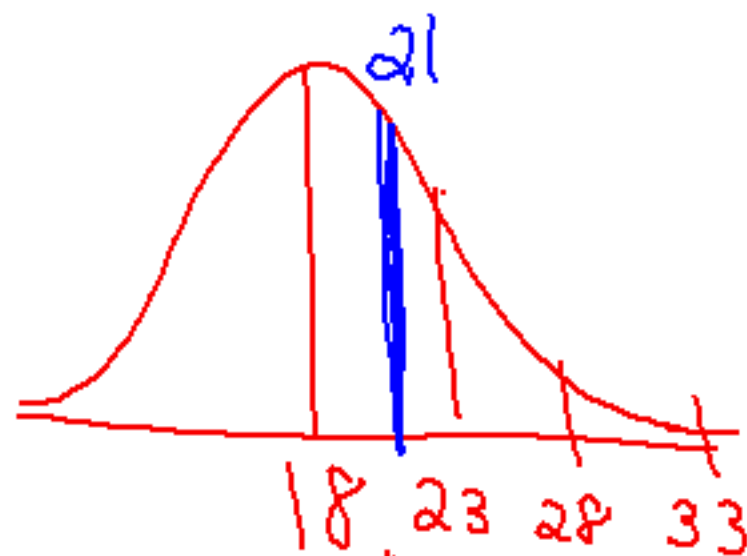
$$z = 1.8$$

John

21

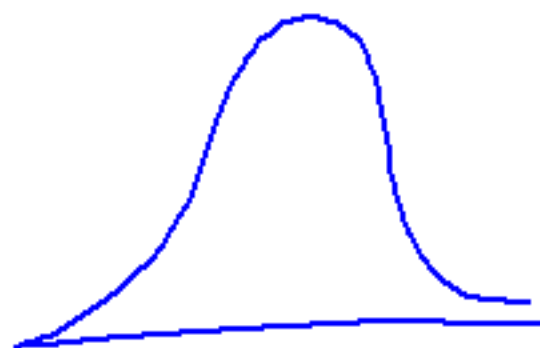
$$\bar{X} = 18$$

$$S = 5$$



$$z = 0.7$$

NORMAL



Standard Score:

$$Z = \frac{X - \bar{X}}{S}$$

one observation

mean/average

Standard dev.

$Z = 1.3$ standard deviations above
your mean

$Z = -2$ std. dev. below your \bar{X}

how many std. dev. you are
above (+) or below (-) your \bar{x}

Jenny

$$z = \frac{600 - 500}{60}$$

$$z = 1.67$$

John

$$z = \frac{21 - 18}{5}$$

$$z = 0.6$$

Example

Math $z=2$

Engl $z=1$

Science $z=0.89$

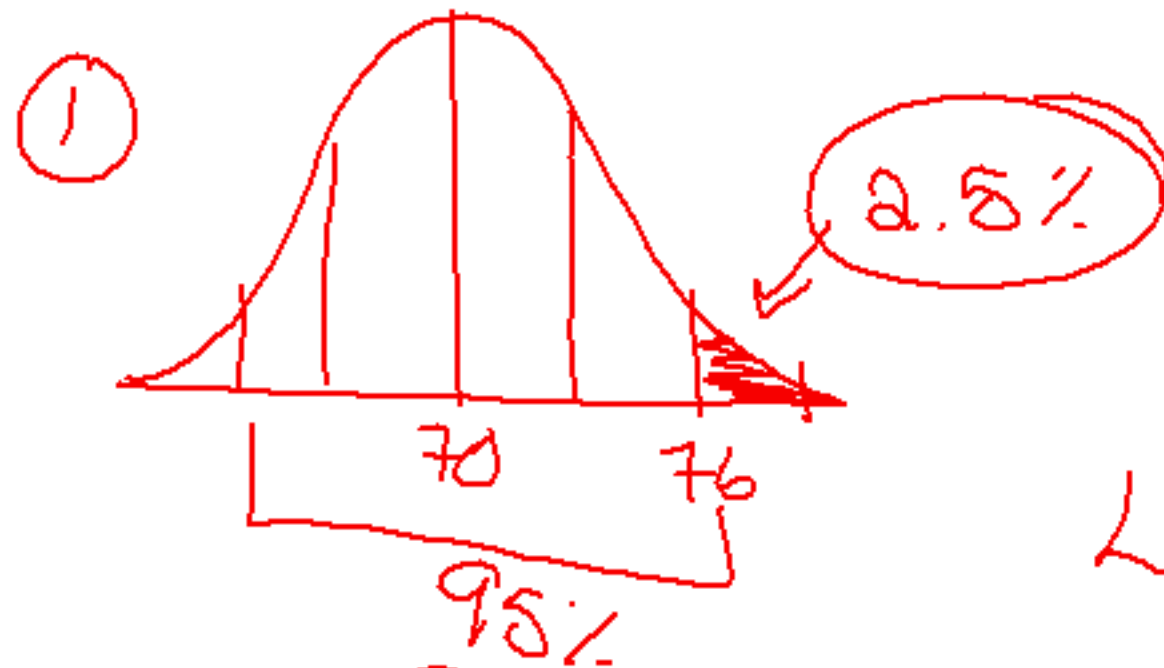
$$\bar{X} = 70''$$

$$S = 3''$$

① Find the Standard score

$$z = \frac{72 - 70}{3} = \boxed{0.67}$$

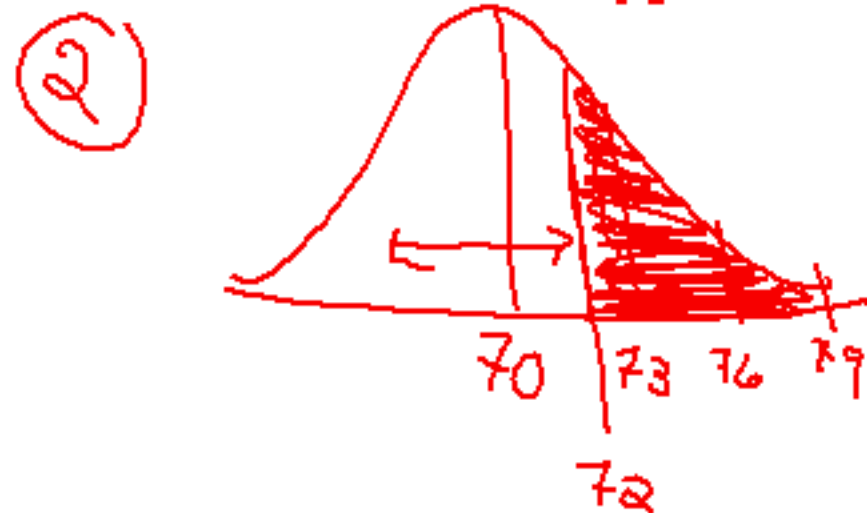
$$= 0.7$$



② Use table B

Look up z -score
(std. score)

$$100\% - 75.80 = 24.2\%$$



① norm
 $\bar{x} = 64.5''$
 $\sigma = 2.5''$



$$z = \frac{69 - 64.5}{2.5} = 1.8$$

96.41%



$$z = \frac{68 - 64.5}{2.5} = 1.4$$

91.92%

$$c) z = \frac{60 - 64.5}{2.5} = -1.8$$



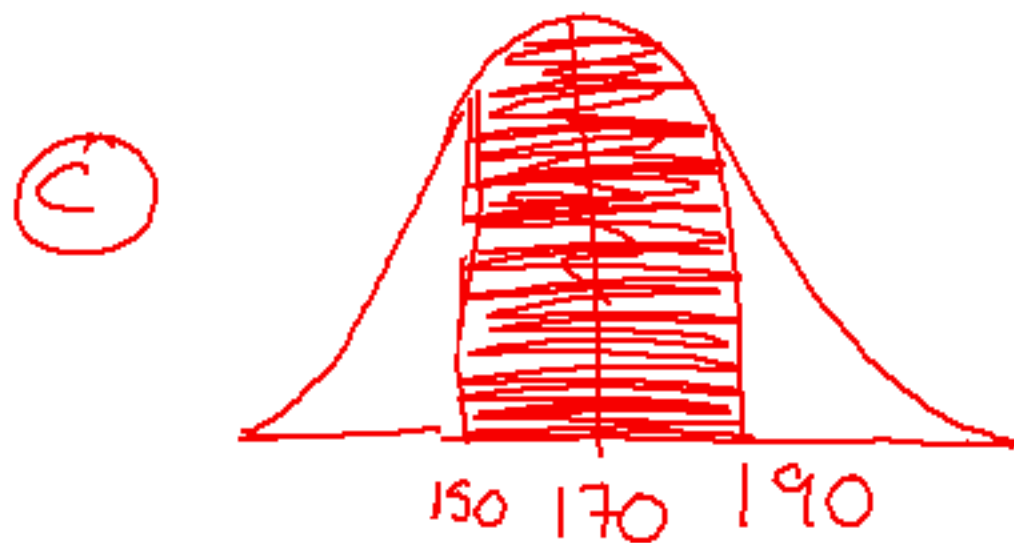
3.59%

$$d) z = \frac{62 - 64.5}{2.5} = -1$$



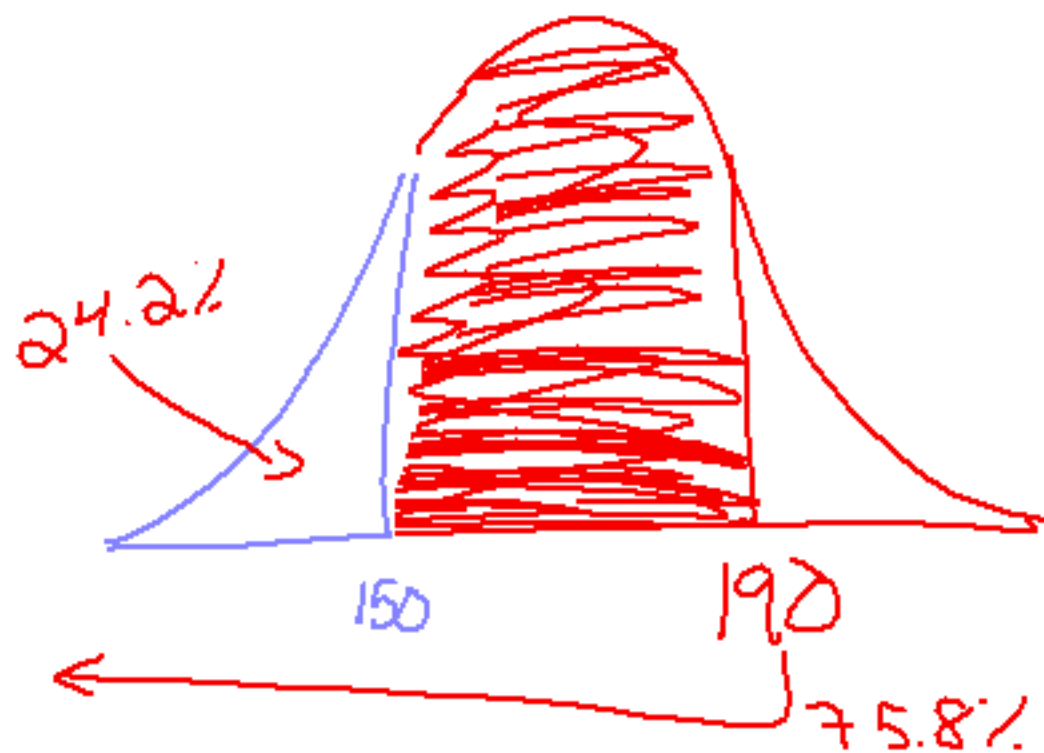
84.13%

③ normal
 $\bar{x} = 170$
 $s = 30$



$$z = \frac{150 - 170}{30} = -0.7$$

$$z = \frac{190 - 170}{30} = 0.7$$

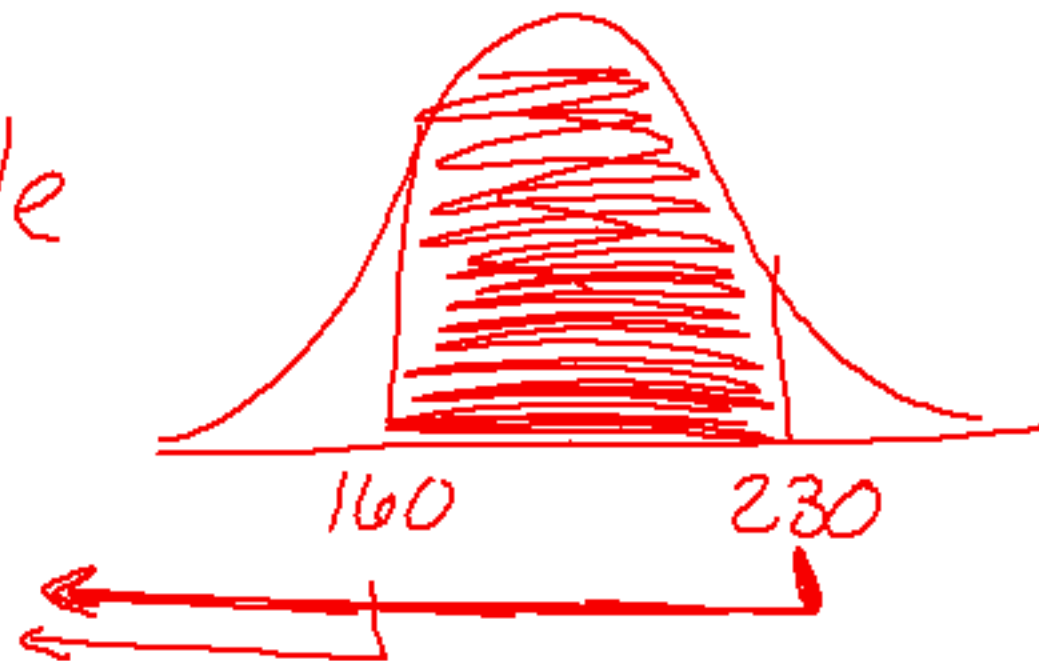


$$\begin{array}{r} 75.8\% \\ - 24.2\% \\ \hline 51.6\% \end{array}$$

a) 38.21%

b) 4.46 percentile

c) 97.73%
- 38.21%
59.52%



$$z = \frac{230 - 170}{30} = 2 \Rightarrow 97.73\%$$

$$z = \frac{160 - 170}{30} = -0.3 \Rightarrow \underline{38.21\%}$$

$$\textcircled{1} \text{ a) } z = 2$$

$$z = -3$$

$$\text{b) } \cancel{x} = 1.89$$

$$x = 1.72$$

$$\textcircled{2} \text{ a) } z = 2.71$$

$$\text{b) } \cancel{x} = 694$$

$$\textcircled{3} \text{ a) } 99.38\%$$

$$\text{b) } 99.38\%$$

$$\text{c) } z = -6.25$$



$$-2.15 = \frac{x - 780}{40}$$